7. SUMMARY OF FINDINGS AND RECOMMENDATIONS

7.1 Significant Findings During Review

Review of current documents, such as the General Plan, Growth Management Plan, resources from the San Diego Association of Governments (SANDAG) and the US Census Bureau, provide an insight to population growth within California, specifically the City of Carlsbad. These projections for population and housing, although varying in rate of growth, clearly show that the City of Carlsbad is approaching a "build-out" condition. While the dwelling unit limitations imposed by the 1986 Proposition E-Growth Management Ordinance suggest an estimated population cap of 135,000 and a maximum number of housing units of 54,599, recent projections estimate a slightly smaller ultimate city size which may be reached between the years of 2020 to 2030.

SANDAG projects a rate of population growth of less than 1.0% per year, over the next 25 years. This trend suggests that the City of Carlsbad will reach it population potential and build-out condition in the year 2030.

The U.S. Census Bureau keeps track of population and performs a nationwide count every ten years. Based on population counts every ten years it can be inferred that there is growth rate of 2.0% per year. Under the assumption that housing units will have to keep up with population demand, using this estimated projection, the population will reach its estimated cap and build out just before the year 2030.

The City of Carlsbad tracks and keeps an updated tally of population and development (housing units) as part of an effort to meet their "Growth Management" requirements. The City's Growth Management Ordinance has two effects: it reduces residential density and imposes more stringent improvements and/or fee requirements for all development. Thus, provides for the necessary public facilities and basic services that will be required for the growing population.

It is recommended to maintain an updated growth projection to determine future costs and the need for necessary basic services that will be required to keep up with the City's anticipated growth. The anticipated growth will have an impact on available developable land, which may translate to a higher impact fee in future years.

7.2 Findings for Watershed Mitigation

The City of Carlsbad has sensitive habitats surrounding their unique hydrologic features identified within each basin that must be protected from human intervention or development. Protection of these sensitive areas is assured through various city regulations, requirements, design procedures and respective permitting agencies. When development or master planned facilities are proposed to adjacent sensitive areas, the City and/or developer must notify the appropriate entity to address impacts through an environmental document. It is imperative for the City and/or developer to maintain a working relationship with the permitting agencies that have jurisdiction over the environmentally sensitive habitats and features to minimize conflicts and agree on mitigation measures for successful permitting and subsequent approval of project. It is recommended to contact the permitting agencies early in the conceptual design process so as to minimize unforeseen mitigation costs or delays in the permitting process.

The information provided for Master Planned Facilities within the City's jurisdiction provides a conceptual approach to the location, type and size of proposed facility, and proposed construction methodology. These

facilities are also described within a Programmatic Environmental Impact Report (PEIR) that provides a conceptual environmental analysis and addresses potential impacts. With the proper care and understanding of engineering, field practices and environmental constraints, the conceptual approach can provide valuable information that can help to address impacts, determine a construction methodology, generate quantities for material, equipment and labor, and mitigation costs. These costs, subject to inflation and socio-economic restrictions are adjusted and further refined so as to develop future project cost estimates. The environmental analysis does not preclude an entity from addressing mitigation, development of appropriate engineering controls and specifications for the design process. Where appropriate, the process ensures review by the regulatory agencies prior to the bid process and subsequent construction.

Along with Master Planned Facilities that fall under the Planned Local Drainage Area (PLDA) Fee Program, the Non-PLDA projects, Capital Improvement Projects and associated Operations and Maintenance work are described. It is noted that all projects identified in this DMP Update are subject to environmental review and clearance and therefore, this DMP Update will serve as the basis of analysis for the Program Environmental Impact Report (PEIR) described above.

Based on typical projects described for master planned facilities, mitigation costs due to temporary construction impacts can be grouped into:

- the procurement of permits ($10,000 to $25,000)
- restoration of impacted non-sensitive areas due to temporary construction ($15,000 to $90,000/acre) + 5 years maintenance and monitoring
- restoration of impacted sensitive areas due to temporary construction ($40,000 to $80,000/acre) + 5 years maintenance and monitoring
- offsite habitat mitigation for permanent impacts ($75,000 to $170,000/acre) + 5 years maintenance and monitoring

Expected mitigation costs based on habitat proximity to PLDA projects can range between 10% (for large projects) to 20% (small projects) of project construction costs. It is recommended to incorporate this environmental mitigation cost as a projected cost during the environmental review and design process, as necessary, prior to bid and construction of PLDA projects.

7.3 Findings During Model Development

The limited hydrologic analyses for selected projects were based on a combination of assumed field conditions and theoretical parameters. As discussed in Section 3.6.2 - Data Assumptions, where GIS information was not available, assumptions were based on practical construction methods to generate the proposed pipe networks. Minimum pipe cover, mild pipe slopes, standard manholes and inlets where utilized to determine pipe profiles where practical. Runoff volumes were estimated for the 100-year, 6-hour event to determine localized ponding and to determine the capacity of proposed pipe networks. Where "sump conditions" or localized depressions were identified, a 50-year, 6-hour event was utilized to determine localized ponding depths. The 25-year, 6-hour event was utilized to determine function of pipe network during typical rainfall conditions.

The scope of these planning level project descriptions do not take into account utility conflicts (such as sewer, water, power and communication) that may be encountered in the field or during construction. In addition, structural sections where work is proposed, construction easements, property boundary lines, possible condemnation proceedings and City right-of-way has not been taken into account or verified. The limited hydrologic analysis provided in this DMP Update does not preclude the City from developing engineering plans, at an appropriate scale, incorporating field coordinates and tie-in elevations during the design process.

Based on the conceptual designs and modeling outcome, it is recommended to secure proposed funding for engineered designs that will fit the field conditions and subsequent construction of the said facilities identified within this document.

7.4 Findings for Construction Estimates

The cost estimate provided in this DMP Update for the Master Planned Drainage Improvements is classified as a Class 5 estimate. Typically, engineering for the planned improvements is in the conceptual stages (up to 20 percent complete). Class 5 estimates are used to prepare planning level cost, scopes, long range capital outlay planning, and evaluation of alternative schemes. Expected accuracy for Class 5 estimates typically depend on the technological complexity of the project, current reference information, the laws of supply and demand, and the inclusion of an appropriate contingency determination.

In unusual circumstances, the accuracy of the estimates can be impacted by volatility in the market place, such as the scarcity of materials driving cost higher than expected or the price of gasoline driving up the cost of shipping. These impacts, if anticipated, can be taken into account with the proper contingency determination. The current impacts that have been taken into account include, but are not limited to, the price of gasoline, increased cost in steel and concrete, and shipping of material.

This Class 5 estimate incorporates the cost of engineering review, environmental permitting, and costs of material and labor as published in current supporting literature. This cost estimate is adequate for the preparation of planning level costs to support the Carlsbad Drainage Master Plan Update. This Class 5 estimate does not include the cost to purchase real property or incorporates the legal and administrative costs for such transactions.

7.5 Findings for Fee Development

Chapter 5 discusses the funding mechanisms developed to cover the capital project costs identified in this Drainage Master Plan Update. As the projects identified in the master plan are required to mitigate the impacts of new development, developer exactions in the form of impact fees are emphasized. As such, the update of the current Planned Local Drainage Area (PLDA) fees is developed, while other funding options are also summarized. State law precludes establishment of a facility fee unless it can be shown to be reasonably related to the impacts created by the development. The proposed program meets the intent of this law by requiring new developments to pay the full costs to mitigate their impacts.

The use of development exactions is recommended as the primary source of funding for new storm drainage facilities. Development exactions will include payment of PLDA impact fees on an acreage basis, contributions of developer-built facilities, and lump sum payments under developer agreements. This method is consistent with past practice and the City's Growth Management Program.

The key calculations for these acreage-based fees are based on the incremental costs of new expansion-related projects required for new stormwater drainage, and the additional new drainage volumes from the new developments. Based on this incremental cost approach, fees are based solely on the additional stormwater runoff resulting from development of available lands.

To satisfy the final build out of the City, it is assumed that most, if not all capital projects must be constructed to meet the requirements of the Carlsbad General Plan. Due to a limited amount of developable land per drainage basin, increased costs for construction materials and the number of capital project that remain to be constructed within each basin, the cost for construction was distributed per individual basin. To keep fees to a manageable level, costs were further distributed into three main categories (Low, Medium and High) as shown below.

Updated PLDA Fees ($/Acre excluding constrained areas)					
Planned Local Drainage Area					
Runoff Level	A	B	C	D	Average
Low	$5,270	$1,970	$1,912	$1,813	$2,206
Medium	$10,480	$3,797	$2.705	$2,966	$3,899
High	$22,837	$8,535	$8,287	$7,857	$8,921

Fee credits will be given for all developments which construct onsite master planned drainage facilities up to the maximum amount of PLDA fee paid by the development. Fee credits will be determined at the time PLDA fees are due and will in all cases be based upon the value of the facility as it is estimated in this report (adjusted for inflation) unless a revised fee schedule is approved in advance of the fee payment.

Based on the analysis described above and discussions with City staff, it is recommended to further explore the above mentioned updated PLDA fee structure. Implementation of the updated rates in this structure must comply with state and local regulations. It is recommended the update be coordinated with the City's legal counsel and presented to affected local developers prior to any request for City Council adoption.